REMARKS

Reconsideration of this application, based on this amendment and these following remarks, is respectfully requested.

Claims 1, and 3 through 28 remain in this case. Claims 1, 3, 5, 11, 12, 17 through 21, and 27 are amended. Claim 2 is canceled.

Figure 6 is amended to correct minor errors, including the directionality of the arrows between blocks 65 and 66 and SISO decoder block 35, and to correct the designation of which of blocks 65, 66 is the interleaver (π) and which is the de-interleaver (π^{-1}). The specification is amended in a manner corresponding to this amendment to the drawings. It is contemplated that the errors, and the correction, would be readily apparent to those skilled in the art having reference to this specification, and that therefore no new matter is presented. Entry of this amendment to the drawings and to the specification is respectfully requested.

Claim 5 was objected to because of an informality in the recitation of the connection of communication symbols to the recited SISO decoders. Claim 5 is amended to correct this informality, by clarifying that the probabilities corresponding to the first communication symbol is received at an *a priori* output probability input terminal of the first SISO decoder (in other words, an input terminal that receives *a priori* output probabilities). Similarly, amended claim 5 recites that the probabilities corresponding to the second communication symbol is received at an *a priori* output probability input terminal of said second SISO decoder (*i.e.,* an input terminal that receives *a priori* output probabilities). The specification clearly supports this amendment to claim 5, and corresponds to the values forwarded to the SISO decoders.[1] As such, no new matter is presented by the amendment to claim 5, and Applicants submit that the amendment to claim 5 corrects the objectionable informality.

[1] Specification of S.N. 09/925,077, page 8, lines 5 and 6; page

Claims 11 and 12 were objected to because of certain informalities regarding the recitation of an interleaver and a de-interleaver. Claims 11 and 12 are amended to address this informality, by amended claim 11 now reciting only the de-interleaver, and amended claim 12 reciting only the interleaver, the claims being otherwise indifferent relative to which of the SISO decoders is so coupled to the other (and, in fact, a de-interleaver actually corresponding exactly to an interleaver, and performing interleaving operations). Applicants submit that the amendment presented to claims 11 and 12 is in no way narrowing nor is presented for any reason related to patentability.[2] Applicants also submit that no new matter is presented by this amendment, and that the amendment overcomes the objection raised by the Examiner.

The undersigned notes the indication that claims 10, 11, 27, and 28 are objected to as dependent upon a rejected claim, but are otherwise directed to allowable subject matter. The undersigned presumes, from this indication, that claim 12 is also directed to allowable subject matter because it depends on claim 11. The undersigned also presumes that claim 10 is not in fact considered by the Examiner as directed to allowable subject matter because of the specific grounds of rejection stated in the Office Action,[3] but that the Examiner intended that claims 11 and 12 are instead directed to allowable subject matter. Claims 11 and 27 are amended to be presented in independent form, incorporating the limitations of the claims upon which they previously depended, as suggested by the Examiner. Applicants therefore respectfully submit that claims 11, 12, 27, and 28 are now in condition for allowance.

Claims 1 through 10, and 13 through 17, were rejected under §102(b) as anticipated by the Wang et al. reference[4] The Examiner found each of the elements of the claims to be met by the reference.[5]

Claim 1 is amended to overcome the rejection. Amended claim 1 now requires that the first and second SISO decoders each have a first input coupled to the probability generator for

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[2] *See Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 535 U.S. 722, 62 USPQ2d 1705 (2002), *on remand*, 304 F.3d 1289, 64 USPQ2d 1698 (Fed. Cir. 2002).
[3] Office Action of March 1, 2005, page 5.
[4] Wang et al., "Iterative (Turbo) Soft Interference Cancellation and Decoding for Coded CDMA", *Trans. on Comm.*, Vol. 47, No. 7 (IEEE, July 1999), pp.1046-61.

receiving pluralities of probabilities corresponding to first and second communication symbols, respectively, that the first SISO decoder has a second input coupled to a first output of the second SISO decoder, that the second SISO decoder has a second input coupled to a first output of the first SISO decoder, and that the probability generator generates one or more of the pluralities of probabilities in response to SISO information it receives from a second output of each of the SISO decoders. The specification clearly supports this amendment to claim 1,[6] and as such no new matter is presented.

Claim 2 is canceled, considering the amendment to claim 1. Claim 3 is amended to now depend on claim 1, rather than canceled claim 2. Claim 17 is amended to clarify the interconnection among the SISO decoders, similarly as claim 5 discussed above. No new matter is presented.

Applicants submit that the Wang et al. reference nowhere discloses the coupling of output of any of its multiple SISO decoders to an input of another of its multiple SISO decoders, as now required by amended claim 1 and its dependent claims. Rather, each SISO channel decoder in the system disclosed by the Wang et al. reference[7] provides its output as feedback only to the SISO multiuser detector, and toward the input of the same SISO channel decoder itself to derive extrinsic information that is not influenced by the *a priori* information from the previous iteration.[8] Therefore, Applicants submit that the Wang et al. reference fails to disclose or suggest the coupling of an output of one SISO channel decoder to another SISO channel decoder, as required by amended claim 1.

Accordingly, Applicants submit that amended claim 1 and its dependent claims are all novel over the Wang et al. reference. Reconsideration of the §102(b) rejection of claims 1 through 10 and 13 through 17 is therefore respectfully requested.

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[5] Office Action, *supra,* pages 3 through 6.
[6] Specification, *supra,* page 8, lines 5 through 17; page 9, lines 18 through 20; Figures 3 and 6.
[7] *See* Wang et al., *supra,* Figure 1.
[8] Wang et al., *supra,* page 1048, left-hand column.

Applicants further respectfully submit that there is no suggestion from the prior art to modify the teachings of the Wang et al. reference in such a manner as to reach amended claim 1 and its dependent claims. The detailed mathematical derivation presented in the Wang et al. reference renders it speculative, at best, to disrupt this detailed approach to introduce probability information from a different decoder channel into the derivation of the LLR of the code bit for a given decoder channel. Suggestion to modify the Wang et al. reference in this manner would therefore be the result of the hindsight application of Applicants' own teachings, and thus improper. In addition, the dramatic performance improvement[9] provided by the invention of amended claim 1 and its dependent claims relative to conventional techniques further support the patentability of these claims.

Accordingly, Applicants respectfully submit not only that the §102 rejection of claims 1 through 10 and 13 through 17 is overcome by the amendment to claim 1, but also that amended claim 1 and its dependent claims are in fact patentably distinct over the prior art of record in this case.

Claims 18 through 26 were also rejected under §102(b) as unpatentable over the Wang et al. reference, on similar grounds as asserted against claim 1 and its dependent claims.[10]

Claim 18 is amended to overcome the rejection. Amended claim 18 now recites that each of the SISO decoders produces *a posteriori* input probabilities, and now requires the additional step of forwarding these *a posteriori* input probabilities as produced by the first and second SISO decoders to the second and first SISO decoders, respectively. Claims 19 through 21 are amended for consistency with the amendment to claim 18, upon which they depend. No new matter is presented by the amendment to claims 18 through 21, considering the clear support by the specification in this regard.[11]

Applicants submit that the Wang et al. reference falls short of the requirements of amended claim 18 and its dependent claims. Specifically, Applicants submit that the Wang et al.

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[9] Specification, *supra,* page 12, lines 1 through 8; Figure 7.
[10] Office Action, *supra,* page 6.

reference does not teach discloses the forwarding of *a posteriori* input probabilities produced by said first and second SISO decoders to said second and first SISO decoders, respectively, as now required by amended claim 18 and its dependent claims. As discussed above relative to claim 1, the Wang et al. reference teaches only that the output of each of its multiple SISO channel decoders are forwarded as feedback only to the SISO multiuser detector, and to an adder in the same SISO channel decoder itself to remove influence from the *a priori* information from the previous iteration.[12] Nowhere is the result of any of the channel decoders of the Wang et al. reference forwarded to any of the other channel decoders, according to the reference. Therefore, Applicants submit that the Wang et al. reference fails to disclose or suggest the forwarding step of amended claim 18.

Accordingly, Applicants submit that amended claim 18 and its remaining dependent claims are all novel over the Wang et al. reference. Reconsideration of the §102(b) rejection of claims 1 through 10 and 13 through 17 is therefore respectfully requested.

Applicants further respectfully submit that there is no suggestion from the prior art to modify the teachings of the Wang et al. reference to provide the forwarding step, and thus meet amended claim 18 or any of its dependent claims. As also discussed above relative to claim 1, this lack of suggestion to modify the Wang et al. reference is especially apparent given the detailed mathematical derivation presented by its teachings. One can surmise that it would be extremely disruptive to that methodology to change its basis of deriving the code bit LLRs in one decoder channel to introduce *a posteriori* input probabilities from a different decoder channel. Accordingly, any assertion that the prior art would suggest such modification of the Wang et al. reference in this manner would necessarily be based on the improper hindsight application of Applicants' own teachings. And, also as mentioned above, the benefits of the invention of claim 18 in its dramatic performance improvement[13] over conventional techniques further support the patentability of claims 18 through 26.

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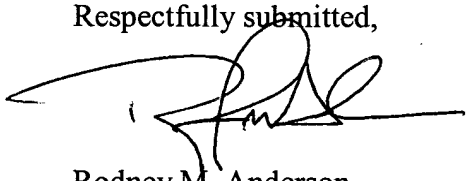
[11] Specification, *supra,* page 8, lines 5 through 17; page 9, lines 18 through 20; Figures 3 and 6.
[12] Wang et al., *supra,* page 1048, left-hand column.
[13] Specification, *supra,* page 12, lines 1 through 8; Figure 7.

Accordingly, Applicants respectfully submit that the amendment of claim 18 overcomes the §102 rejection of it and its dependent claims 19 through 26, and further that amended claim 18 and its dependent claims are patentably distinct over the prior art of record in this case.

The prior art cited by the Examiner as pertinent, but not applied, has been considered but is not considered to be within the scope of the claims now in this case.

For the above reasons, Applicants respectfully submit that all claims now in this case are in condition for allowance. Reconsideration of this application is therefore respectfully requested.

Respectfully submitted,



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CERTIFICATE OF MAILING
37 C.F.R. 1.8

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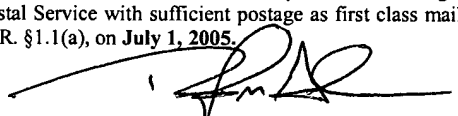

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Amendment to the Drawings:

The attached annotated sheet 3 and corresponding replacement sheet 3, includes changes to Figure 6.

In Figure 6, the direction of the arrows between the block referred to by reference numeral 35 and the block referred to by reference 65, and between the block referred to by reference numeral 35 and the block referred to by reference 66 is reversed in both cases. Also in Figure 6, the superscript $^{-1}$ is deleted from the block referred to by reference 65, and is inserted into the block referred to by reference 66.

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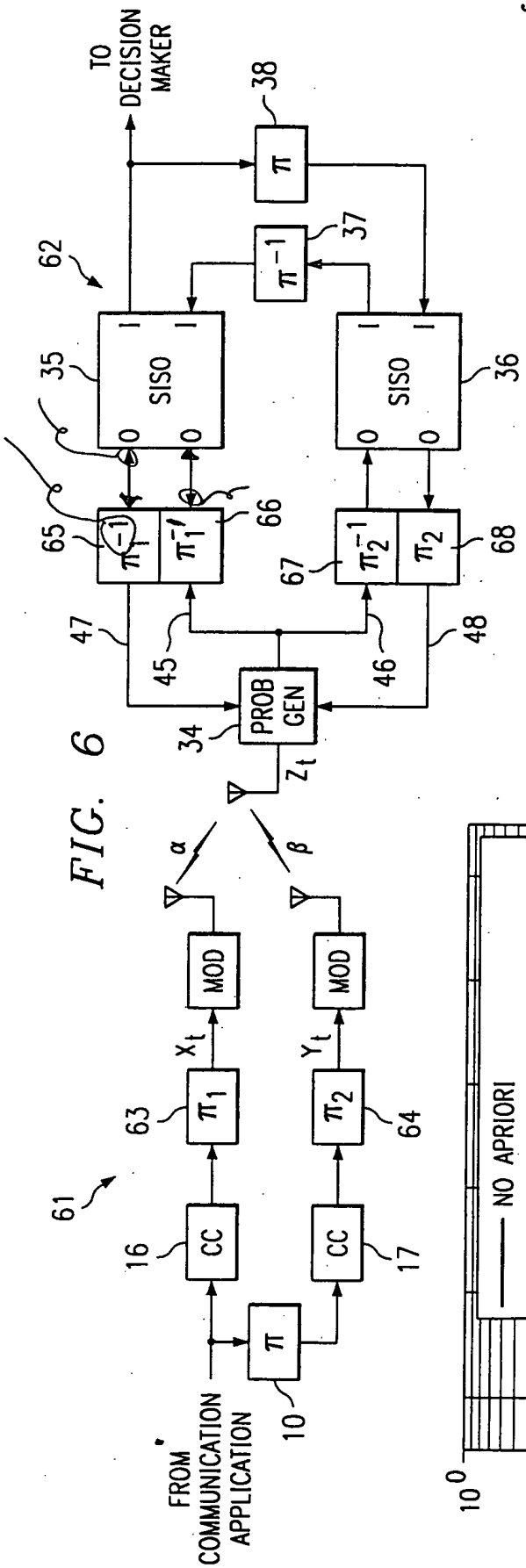

FIG. 6

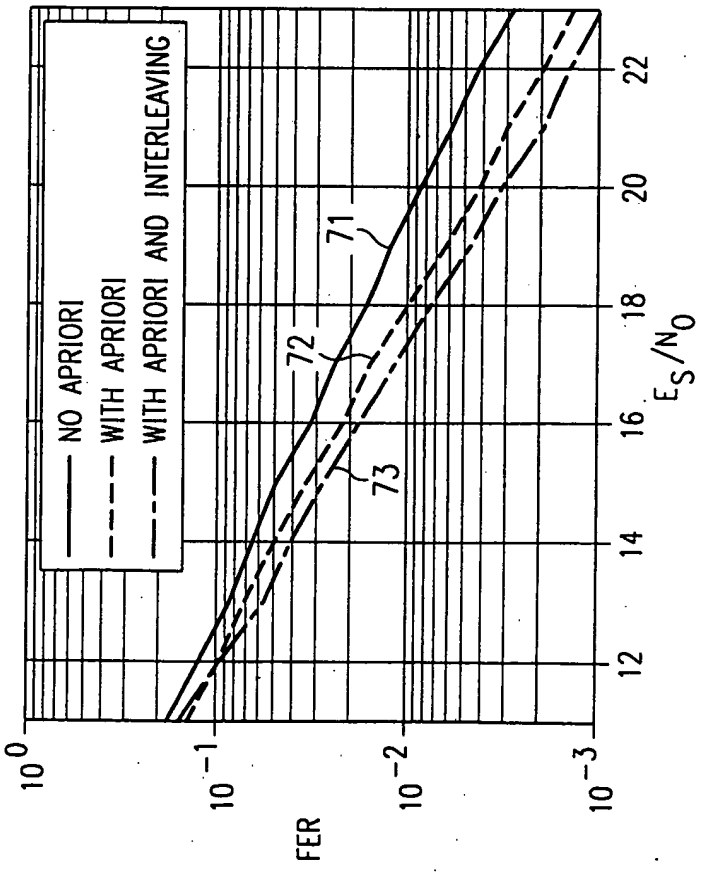

FIG. 7